

RESPONSE (UNDER 37 C.F.R. § 1.1116)
U.S. Application No.: 10/000,323

Claims 1, 3, 4-12 and 14-20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over US 6,097,147 Baldo et al (Baldo) in view of US 6,268,071 Yasukawa et al (Yasukawa) further in view of Tsai (earlier identified). Paragraph 4 of the Action.

The Examiner's reading and application of the prior art and the Examiner's response to Applicant's arguments are set forth in the Action in some detail, and will not be repeated here except as necessary to an understanding of Applicant's traversal which is now presented.

The Present Invention

The present invention relates to a method for producing a light-emitting device comprising particular steps. The claimed invention has the following features:

- (a) disposing a transparent electrode, one or more organic layers and a back side electrode on a substrate to provide a light-emitting structure;
- (b) disposing sealing parts on the light-emitting structure to isolate the one or more organic layers from external air, where the one or more organic layers comprise a light-emitting layer containing a phosphorescent compound; and
- (c) the light-emitting layer, back side electrode and sealing parts are disposed in an atmosphere where both moisture concentration and oxygen concentration are 100 ppm or less.

Note these features are discussed hereafter.

Traversal of the Rejection over Moriyama in view of Tsai

In the Action at page 3, the Examiner states:

“[I]t would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the OLED of Moriyama with a moisture and oxygen content of no more than 1 ppm, with the purpose of avoiding the adverse effects of oxygen and moisture in an OLED...(omitted)...in the lifetime of the device.”

Applicant submits that the above statement by the Examiner provides one of ordinary skill in the art no basis to combine Moriyama and Tsai, the combination of references being necessary to support the Examiner’s rejection.

Applicant respectfully submits that the Examiner has not provided sufficient reasons why one of ordinary skill in the art would have been led or motivated to combine Moriyama and Tsai and, as a consequence, the rejection based on Moriyama in view of Tsai is flawed and should be withdrawn.

Even assuming, *arguendo*, that one of ordinary skill in the art would be motivated to combine Moriyama and Tsai, the combination of Moriyama and Tsai still does not result in the light-emitting device of the present invention.

Applicant admits that Moriyama teaches that dark spots will result due to the adsorption of water (Moriyama, Paragraph [0019]) and discusses the influence of oxygen on an organic electroluminescent device. However, Applicant respectfully submits that Moriyama does not disclose or suggest the particular method for producing a light-emitting device claimed herein, and most especially does not disclose or suggest, either explicitly or implicitly, feature (c) of the claims herein above discussed where the light-emitting layer, the back side electrode and sealing

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parts are disposed in an inert gas atmosphere where both moisture concentration and oxygen concentration are 100 ppm or less.

Moriyama expressly discloses that a spacing between a sealing housing and an organic EL device is preferably filled with an inert gas (such as a rare earth gas or nitrogen gas) in order to remove gases which adversely affect the organic EL device, including oxygen [0058] and the EL device thereafter being placed in a glove box filled with nitrogen gas (Paragraph [0071]), the overall steps comprising a method of producing a light-emitting device. Moriyama is silent on any moisture problem at the above two points and is also silent on the 100 ppm concentration limit on both moisture and oxygen as in the present claims.

To remedy the above defect, the Examiner relies upon Tsai, and specifically the teaching in Tsai that the Tsai process for producing an organic electro-luminescent device, the required content of water and oxygen therein is no more than 1 ppm (Tsai, column 3, lines 7-11).

Applicant respectfully submits that obviousness cannot be established by combining the teachings of prior art to reach the conclusion that a claimed invention is obvious, absent a teaching, suggestion or incentive supporting the combination of the teachings of the prior art.

The present claims in feature (c) earlier identified require not only that the sealing parts be disposed in an atmosphere having a specific concentration of moisture and oxygen, but also that the light-emitting layer and the back side electrode be disposed in such an atmosphere.

Applicant submits that the Examiner has not attached sufficient weight to this “multiple sealing” aspect of the present invention in combining Moriyama and Tsai to reach a conclusion of obviousness, and request withdrawal of the rejection.

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Applicant respectfully submits, in overview, that the Examiner has presented no reason or evidence of record to suggest that invention features (a), (b) and (c) earlier discussed with respect to the method for producing a light-emitting device in accordance with the present invention should be taken piecemeal from the prior art and combined to reach the present invention.

With respect to the Moriyama/Tsai rejection, Applicant also respectfully submits that the presently claimed invention as a whole would not have been rendered obvious by the combination and requests withdrawal.

Traversal of the rejection over Baldo in view of Yasukawa further in view of Tsai

In the paragraph bridging pages 6/7 of the Action, the Examiner states (first having discussed Tsai teaching to avoid the adverse effects of oxygen and moisture in an OLED that the required content of both oxygen and water (moisture) should be no more than 1 ppm):

“[I]t would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the OLED of Baldo-Yasukawa with an oxygen content of not more than 1 ppm...(omitted)...the lifetime of the device.”

Applicant submits that the above statement by the Examiner provides one of ordinary skill in the art no basis to combine Baldo with Yasukawa and Tsai, the combination of references being necessary to support the Examiner's rejection.

Applicant respectfully submits that the Examiner has not provided sufficient reasons why one of ordinary skill in the art would have been led or motivated to combine Baldo/Yasukawa and Tsai and, as a consequence, the rejection based on Baldo/Yasukawa/Tsai is flawed and should be withdrawn.

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Even assuming *arguendo*, that one of ordinary skill in the art would be motivated to combine Baldo and Yasukawa and Tsai, the combination of references still does not result in the light-emitting device of the present invention.

Baldo does disclose an organic electroluminescent device containing a phosphorescent compound. However, Baldo does not clearly disclose feature (c) earlier discussed, i.e., “(c) the light-emitting layer, back side electrode and sealing parts are disposed in an atmosphere where both moisture concentration and oxygen concentration are 100 ppm or less.”

Yasukawa merely discloses an organic EL display filled with an inert gas where, in a closed space, the inert gas has a moisture content of 100 ppm or lower (Yasukawa, column 8, lines 63-67). Applicant respectfully submits that in a manner similar to Baldo, Yasukawa does not disclose or suggest, either explicitly or implicitly, invention feature (c) earlier discussed.

The Examiner then apparently relies upon Tsai to support the defects in Baldo-Yasukawa.

Applicant respectfully submits that Tsai does not provide any suggestion or motivation for the combination of Baldo/Yasukawa/Tsai since Tsai does not disclose either expressly or implicitly, invention feature (c) earlier discussed.

Applicant respectfully submits, in overview, that the Examiner has presented no reason or evidence of record to suggest that invention features (a), (b) and (c) earlier discussed with respect to the method for producing a light-emitting device in accordance with the present invention should be taken piecemeal from the prior art and combined to reach the present invention.

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Accordingly, with respect to the Baldo/Yasukawa/Tsai rejection, Applicant respectfully submits that the presently claimed invention as a whole would not have been rendered obvious by the combination and suggest withdrawal.

Withdrawal of all rejections and allowance is requested.

Respectfully submitted,



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Date: July 29, 2004